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ABSTRACT

Apprehension on the part of students who must engage in public speaking figures high on the list of student fears. Speech anxiety has been viewed as a trait--the overall propensity to fear giving speeches--and as a state--the condition of fearfulness on a particular occasion of speech making. Methodology in therapy research should abide by the following standards: use an appropriate, no-treatment control group; use subjects with greater than average anxiety; use a matching procedure to insure that subjects in pretest groups have comparable scores on at least one reliable measure; and corroborate findings with data from another form of measurement. Recent research has focused on such topics as the following: systematic desensitization; rational emotive therapy, fixed role therapy, and cognitive modification; implosion; flooding; successive approximations; counseling and insight ordeal therapy; relaxation training; voluntary heart rate control; misattribution therapy; comparative and combinational effects; and delayed posttest results. A more rigorous concern with methodology as developed in behavioral science research will lead to greater accuracy in future studies. (DF)

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RECENT RESEARCH ON THE TREATMENT OF SPEECH ANXIETY

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Recent Research on the Treatment of Speech Anxiety

In recent years communication departments have generally moved away from an emphasis on public speaking toward an emphasis on informal interpersonal communication. While this trend may be applauded for several reasons, public speaking courses remain an integral part of curricula at many institutions. Right or wrong, many universities or their political subdivisions (schools, departments) still require public speaking courses for graduation. In other institutions some kind of fundamentals of communication course is required for all majors in one field or another. Depending on many factors, especially the orientation of the instructor, a significant part of the grade in such courses often rests on performance in speeches or oral reports. The use of oral reports is also prevalent in intermediate and secondary schools (Johnson, Tyler, Thompson, & Jones, 1971).

Just as the teaching and practice of public speaking have not suddenly evaporated, neither has apprehension or fear among those who must give speeches. In the often-cited Bruskin (1973) report, fear of giving a speech ranked high among things Americans fear. Among college students, Geer (1965) found fear of giving a speech ranked seventh highest of 51 items on the Fear Survey Schedule II for women and sixth for men.

Fortunately numerous researchers have tested the efficacy of

treatment procedures for alleviating speech anxiety, which may be defined either as a trait, the overall propensity to fear speech giving, or as a state, i.e., how frightened one is while giving a particular speech. But less fortunately, and often the case in behavioral science, research has not proceeded as efficiently as it might. Repeated methodological problems are one instance where the research process falls short.

Thus a critical review of research on the treatment of speech anxiety is in order. Since Clevenger's (1959) more general review article, no similar review has appeared. Several reviews of the efficacy of single treatment procedures exist (e.g., Kazdin & Wilcoxon, 1976), as do commentaries on explicit methodological problems (e.g., Cone, 1977; Kaplan & Litrownik, 1977) as they pertain to behavior therapy research in general; but there is no comprehensive study covering all research in treating speech anxiety and the sometimes unique methodological problems involved. Such a review may be valuable to future scholars who may wish to test new therapeutic procedures, to communication teachers who may wish to set up their own treatment programs, and to teachers who need guidance on which of many therapy facilities, like mental health clinics and counseling centers, would be the best choice for their students.

This paper will review only research since 1959 on the treatment of speech anxiety, i.e., studies where the authors claim to assess the effectiveness or one or more therapeutic procedures in reducing the anxiety subjects experience when they give speeches, prepared

oral messages delivered to audiences of more than three listeners with little or no verbal audience feedback. Only studies comparing groups of subjects are considered; case reports on one or two subjects (Grossberg, 1965; Morley, 1965; Weissberg, 1975) are omitted. Also omitted is research on more global fear and/or avoidance of communicating which is subsumed under concepts like social or interpersonal anxiety (Watson & Friend, 1969), communication apprehension (McCroskey, 1970), and speech reticence (Phillips, 1968). While research in those concept areas is both extensive and important, there are numerous reasons for excluding it here. Anxiety about public speaking is frequently a circumscribed problem, unrelated to overall coping ability. Evidence for this claim may be found in the earlier studies covered by Clevenger (1959) which found only low correlations between speech anxiety and adjustment inventory scores. A recent group of authors (Michenbaum, Gilmore & Fedoravicius, 1971) has estimated that about half of those volunteering for speech anxiety treatment have noticeable problems with anxiety in other social situations. Phillips (1968) has noted that anxiety is often not a problem among the severely reticent

Moreover, social or interpersonal anxiety is a more pervasive problem for the sufferer. There is considerable evidence summarized in Michenbaum, et al. (1971) that methods which work well with specific phobias are often less effective with more pervasive problems. Thus the exclusion of the apprehension-reticence-social anxiety literature seems justified.

This review covers only published studies. The reported studies reflect an issue-by-issue examination of the two ICA journals, the three national and four regional SCA journals, a search of Psychological Abstracts, and a computerized Medline search of the 2600 journals abstracted in Index Medicus.

Criteria Used in Evaluation

Before proceeding it is important to identify some of the main criteria used in appraising treatment articles. The criteria emphasize problems unique to therapy research in general and to speech anxiety research in particular.

A first set of criteria apply to design. The research design should include an appropriate no-treatment (NT) control group. Where treated subjects are drawn from existing public speaking classes, NT should be drawn from the same source to control for whatever positive or negative effects the course may have. It is preferable that NT be drawn from the same course sections as the treated subjects in order to control for instructor effects. The requirement for an NT may be waived, though, in studies comparing therapy procedures if one of more of the procedures has consistently been shown superior to NT. Additional problems in regard to obtaining and assigning subjects are discussed later.

The use of NT is a minimum standard. Virtually any treatment will generate short term results better than NT as a result of giving treated subjects more attention and as a result of creating a positive expectancy set, the therapists' Hawthorne effects. Thus the design should also include an attention-placebo (AP) control group which

allows the investigator to determine how much improvement is due to factors unique to the therapy procedure. A subsequent consideration is whether the placebo manipulation is valid. It is important that evidence be presented to show that AP induced an expectancy of success at pretreatment that was comparable to the pretreatment expectancies in treated groups. If the placebo involves deception, the investigator must also show the subjects believed it. Without the necessary manipulation checks, AP amounts to NT. On the other hand, a strong AP frequently obviates a need for NT.

Further criteria deal with deciding which subjects to include in any research project. At minimum subjects should score above the mean on at least one reliable measure of speech anxiety. Corroboration from other sources that the subjects have more than an average amount of anxiety, that it hinders communication, and that the subjects are truly bothered by it is highly desirable. Teacher evaluations and subject interviews are helpful sources of data. Of course, NT and AP groups should be similarly screened. Ascertaining the superiority of one therapeutic procedure over another or of a therapeutic procedure over AP will be difficult if subjects are not rigorously selected, for differences between pre- and posttest scores will often be too small to produce significant F-ratios.

A final set of criteria deal with measurement and statistics. Researchers should show that subjects in pretest groups have comparable scores on one or more reliable measures. The customary procedure is finding nonsignificant univariate F-ratios across groups. Since the number of subjects per cell is necessarily low in therapy studies

due to the large amount of time spent in actual therapy, purely random assignment cannot be trusted to yield sufficiently comparable pretest scores. In order to meet the pretest comparability criterion, some kind of matching procedure must usually be employed; this in turn raises potential problems of statistical error. That problem is dealt with at a later time.

As a further measurement criterion, investigators should attempt to verify their findings with instruments from more than one measurement domain, i.e., self-report, behavioral or observational, physiological. Results across domain are frequently inconsistent for correlations among measures are usually low and vary considerably from one study to another. Self-report tests, which researchers rely on too much, are especially subject to response bias. In the therapy situation the problems are even more intense than usual. Thankful subjects may want to reward an attentive therapist, or a wait-listed NT subject may wish to subvert the purpose of the study. Aggravating the problem even more is the fact that all therapy subjects are necessarily volunteers.

With the above criteria set down, it is important to add that the customary behavioral science criteria for adequacy of design, measurement, and statistics are also employed. As one example, this author will not report differences as significant unless the .05 level is reached. A sole exception is when excessively conservative Scheffe test for between-cell comparisons is used. In that case .10 is acceptable.

At this point a careful reader will wonder why certain, indeed rather obvious problems of design were omitted from the preceding discussion. The omissions occur because many studies reported below have appropriately controlled for the effects of potentially major exogenous variables. In other cases repeated findings of nonsignificant differences substantially lessen the chance that those variables confound the results.

Nature of the therapist is one major variable that appears benign. Repeated examinations show no evidence that sex of therapist will affect outcome, or that there is a significant sex of subject-sex of therapist interaction. One can conclude at this time that therapist credentials also make little difference since subjects' classmates can be quickly trained to help fellow students as much as PhD psychologists helped the student therapists (Fremouw & Harmatz, 1975). Nor does therapist orientation appear to matter for experienced psychotherapists who oppose behavioral techniques are more effective using them than their traditional insight-oriented (Why am I afraid?) techniques (Paul, 1966).

Also omitted is the nature of the subjects. While nearly all investigators continue to equalize the male-female ratio in each condition, post hoc analyses fail to reveal a sex effect. As with work in other fields, work in treating speech anxiety has usually been with college students. But again, there is no evidence here that results with college students differ from those obtained with younger children or with mixed student-adult groups.

Certain variations in treatment procedure are the last to be discussed here. So far, there is no reason to suspect that length of treatment sessions, their frequency, and the interval between sessions has any appreciable effect. While this claim may seem rash, it should be noted that Myers (1974) found a significant treatment effect with only three 30-minute sessions held at one-week intervals. However, any therapy which is directed toward changing subjects' thought patterns will probably require longer as will efforts to combine therapies.

To conclude this section, it must be stressed that no claim is made here that the variables just discussed will never affect results in speech anxiety research, only that those variables do not appear to influence the results below. It may be the case that control of the variables just mentioned precluded their interacting adversely with other variables. Future studies must take that possibility into account.

While this introductory session may have seemed lengthy, it is hoped that it will make the succeeding discussion and summary more efficient.

Results from Treatment Research

Results presented in this section of the paper observe the stated criteria in the following way: the more nearly the studies meet the criteria, the more those results are stressed in the succeeding summary. Otherwise this summary is mostly nonjudgmental, with the bulk of criticism saved for the last section.

Since it is assumed that the reader is seriously interested in measurement, the presentation of results here is somewhat irregular. Table 1 is devoted to listing abbreviations and citations for the dependent measures that appear in Table 2.

Insert Table 1 about here

Table 2 presents results of treatment studies for each dependent measure. Abbreviations for therapy procedures appear in the succeeding text as each procedure is introduced. But to spare the reader from memorizing too many abbreviations, dependent measures are spelled out in the text. An example of an entry in Table 2 would be:

AH→ RET = SD⟩ RET+SD = AP=NT

An interpretation would be: "On the measure, number of 'ah's per speech, Rational Emotive Therapy was as effective in reducing speech anxiety as Systematic Desensitization. Those two therapies proved more effective on that measure than combined Rational Emotive Therapy and Systematic Desensitization which was no better than either Attention Placebo and No Treatment controls. Attention Placebo and No Treatment did not differ on the 'ah' measure."

Results in Table 2 and the following discussion deal only with pretest and posttest measures from the main experimental design. Many researchers also administer pre-pretest and post-posttest batteries of personality tests which are not covered here.

Systematic Desensitization. By far the most widely used anxiety reduction therapy is Systematic Desensitization (SD). Traditional

Insert Table 2 about here

SD (Wolpe, 1958), i.e., SD without variations that are discussed later, consists of a one-to-one therapist-subject relationship with the subject first learning Jacobson's (1938) relaxation procedure. The subject then constructs a hierarchy of fearful speaking situations that range from least to most anxiety provoking. Traditional SD also requires that the hierarchy be focused on the target variable, in this case speech anxiety, rather than on some other variable like test taking. After the hierarchy is developed, the subject, in a state of relaxation, is told to imagine the least threatening hierarchy situation and to continue relaxing. If the subject begins to feel anxious, he is told to drop the image and try again. The subject works up the hierarchy until able to relax while imagining the top hierarchy situation. The originally postulated theoretical basis for SD is that one extinguishes the anxiety response through a counterconditioning process that pairs the threatening stimulus with a relaxation response rather than with heightened arousal.

Although there are dozens of studies which demonstrate the effectiveness of traditional SD with other phobias (see Kazdin & Wilcoxon, 1976), only three studies have dealt with speech anxiety (Myers, 1974; Paul, 1966; Woy & Efran, 1972) Of those, Myers found SD superior to NT on a physiological measure, Woy & Efran obtained the same result on two self-report measures but not on two physiological measures and one behavioral measure. Paul found SD superior to AP and NT on one measure from each domain but not on a second physiological measure. It must be noted that the Paul

study is nearly impeccable, especially considering the state of behavior therapy research at the time it was conducted. It is one of the few studies here which meets or exceeds nearly all the criteria stated above. Most impressive is the establishment of a valid and completely credible placebo effect. Another virtue is the relatively large sample size (15 per cell) for this kind of study.

While only three studies use the strictly defined traditional SD, many more studies have established effective variations on the traditional procedure. Thus further tests of the effectiveness of traditional SD are unnecessary.

The variation on SD most often encountered is administration to groups rather than individuals. Using treatment groups from Paul's earlier (1966) study as controls, Paul and Shannon (1966) found group SD as effective as traditional SD on all measures, with the same relationship of group SD to control groups as reported above. Given the clear demonstration that SD was superior to both AP and NT, only a few subsequent studies have used NT. Those studies, each of which will be mentioned later (Kondas, 1967; Michenbaum et al., 1971; Mylar & Clement, 1972; Weissberg & Lamb, 1977; Zemore, 1975), overwhelmingly show SD better than NT. The Michenbaum et al. study adds evidence of the superiority of SD over AP, but it must be observed that the authors express doubts about the validity of their AP manipulation.

Efforts to modify the SD procedure in either individual or

group administration have generally yielded nonsignificant differences. Audiotaped, self-administered SD (Lohr & McManus, 1975; Marshall, Stoian & Andrews, 1977) appears to be as effective as group SD, and group SD administered by graduate students in communication appears to be as effective as SD administered by a graduate student in counseling (McCroskey, Ralph & Barrick, 1970). SD for test anxiety seems to alleviate speech anxiety as well as SD for speech anxiety (Zemore, 1975).

Two studies have attempted to induce a higher expectancy set than one would ordinarily obtain with traditional or group SD. One study (Hemme & Boor, 1976) found the high expectancy set worked better on only one of five measures; the other (Woy & Efran, 1972) found greater improvement on two of five measures. Maleski (1971), in a related variation, failed to find differences when subjects had varying levels of awareness about the rationale behind SD, but the author admitted discovering that therapists did not successfully carry out the experimental manipulation.

At this time evidence for the effectiveness of SD is very strong. It seems to work no matter who administers it, no matter how much time is spent in therapy (as little as 90 minutes, Myers, 1974), and no matter what variations are proposed in the basic procedure--even when a subject is treated for a different anxiety problem.

Rational Emotive Therapy, Fixed Role Therapy, and Cognitive Modification. It is difficult to distinguish among these procedures, at least as they are implemented in the studies surveyed, so they

will be discussed together. Each procedure stresses cognitive processes, emphasizes the need to alter the subject's thinking in order to reduce his symptoms, and provides direction about how thinking should be modified.

As developed by Ellis (1958), Rational Emotive Therapy (RET) is based on the notion that individuals become anxious or otherwise upset because of irrational thinking. Irrational thoughts mediate between the anxiety provoking stimulus situation and the anxiety response. Individuals are conditioned to respond with irrational thoughts, so irrational thinking can be deconditioned. To illustrate, a student is about to deliver a speech in class and says to himself, "It will be horrible if this speech leads anyone here to think I am dumb." A strong anxiety response follows. According to RET the anxiety response would not have occurred if the student had told himself (rationally), "It really doesn't matter much if anyone here thinks I'm dumb," and/or, "It's impossible to impress everyone, so why torture myself imagining that I can?" Hence the objective of RET is to teach the student to substitute rational for irrational self-verbalizations.

Fixed Role Therapy (FRT) was developed by Kelly (1955) and is based on his interpersonal construct theory. In application to speech anxiety treatment, subjects are led to discuss the roles they adopt when giving speeches and the roles others adopt including their cognitions and feelings. Later, subjects write out new roles

for themselves and practice before the therapy group. RET and FRT are similar in their emphasis on reinterpretation of experience. They differ mainly in how dogmatically the therapist tells subjects they are misinterpreting experience and how they should reinterpret it. RET is the more dogmatic. While FRT stresses practice in therapy, RET stresses practice outside the therapy situation.

Developed by Weissberg (1975), Cognitive Modification (CM) is similar to RET except again the RET therapist is more arbitrary in telling subjects what the problem is and how to change it. Compared to FRT, CM places less emphasis on role playing.

While not so numerous as with SD, results for these three therapies is nevertheless encouraging. Michenbaum et al. (1971) found RET superior to AP on six of six dependent measures (both self-report and behavioral). Karst and Trexler (1970) showed RET more effective than NT on two self-report measures but not on two other self-report measures or a behavioral measure. In the same study FRT was found more effective than NT on only three of their self-report tests. In a later study the same authors (Trexler & Karst, 1972) showed RET to be better than NT on two self-report measures but not on four other measures in three domains. It might be added here that in the two studies just mentioned, NT were composed of current speech students as were treatment groups so NT actually functioned as a weak placebo. Finally, Weissberg & Lamb (1977) showed CM more effective than NT on two self-report

tests but not on a physiological measure. Clearly there is a need for more research with cognitive procedures, especially on the kinds of subjects with which they may be more effective than behaviorally oriented therapies like SD.

Implosion. Implosion (IMP; Stampfl & Levis, 1967) is described theoretically as a covert extinction procedure. With or without prior training in relaxation, the subject is instructed to imagine the worst situation he can conceive of, and, unlike SD, he is told to practice holding the image as long as possible. The therapist then builds on the image to make it even worse. The subject might image a speech where no one is listening. To worsen the image the therapist might add phrases like, "They just started to pay attention, and they're all laughing at you," and, "Your instructor has just signalled that you will flunk the course," progressively making the image more horrendous. Having experienced a situation far worse than he could realistically encounter, the subject, perhaps through habituation, experiences less anxiety in the future.

In one study Kirsch, Wolpin, and Knutson (1975) found IMP superior to AP on both a behavioral and a self-report measure. AP was an informal discussion group where speech anxiety was one of the topics discussed. Another study (Mylar & Clement, 1972) revealed IMP more effective than NT on one behavioral measure and one self-report measure but not on either of two additional self-report tests. Subjects in all conditions were graduate theology students in a preaching course. Using a single self-report test, Calef and MacLean (1970) again showed IMP better than NT. Since

this last study will be mentioned at a later time, notice should be taken of Blanchard's (1971) paper which correctly criticized the Calef and MacLean work on several grounds including the confounding of variables and improper statistical analysis.

Research results with IMP on other phobias has been equivocal as to the general effectiveness of the procedure (Mahoney, 1974). It is therefore unclear why the results with speech anxiety, though admittedly few, have been as positive as those reported. Perhaps because of the numerous fears involved in the speech situation (fear of looking awkward, of appearing to be dumb, etc.) the subject can conjure up a more realistically horrid scene than would be possible with anxieties about rats and snakes which the average college student rarely encounters anyway.

Flooding. Having subjects practice repeatedly on tasks equivalent to the top item on an SD hierarchy is referred to as flooding (FLO). The strategy is similar to IMP. The only results are from the Kirsch et al. (1975) study. As with IMP, FLO was discovered to be more effective than AP on both measures.

Successive Approximations. Many public speaking classes follow a Successive Approximations (SUA) approach: students progress from simple to harder assignments. In SUA the subject would begin at an even less threatening level like reading a list of unrelated words. Again Kirsch et al. (1975) found SUA more effective than AP on both measures.

Counseling and Insight-Oriented Therapy. While writings on group and individual psychotherapy directed toward gaining insight into personal problems, i.e., insight-oriented therapy (IOT), are voluminous, very little has been directed toward speech anxiety. Giffin and Bradley (1969a, 1969b) have developed a rationale for counseling and conducted a preliminary study. No difference was found between IOP and NT with a self-report measure.

The other results of interest are those from the Paul (1966) study. IOP proved more effective than NT on behavioral and self-report measures, but not on either physiological measures. No differences between IOP and AP were found.

Relaxation Training. As with some of the procedures noted earlier, unraveling the vocabulary may be as difficult as appraising the results. In the treatment of speech anxiety, two main relaxation (REL) procedures have been used, Jacobson's (1938) Deep Muscle Relaxation which is employed in SD, and Schultz and Luthe's (1959) Autogenic Training. While the Jacobson procedure induces relaxation through muscle exercises, the Schultz and Luthe procedure develops a relaxed state through mental concentration without use of physical exercises. Each procedure leads the subject into a mild autohypnotic state, and in that regard they differ from biofeedback training which is discussed in the next section. At this time there is no evidence for differential effectiveness of the two autohypnotic procedures (Bootzin, 1975).

Research has been focused on testing variations in REL

administration, especially whether REL without focus on speech anxiety is as helpful as REL with focus and whether REL works better when taught as a life coping skill rather than as treatment for speech anxiety. In an excellent study to be discussed later, Sherman, Mulac, and McCann found REL no better than NT on either of two measures. The same result was obtained by Zemore (1975). Nonsignificant differences between REL and AP were also reported by Goldfried and Trier (1974) on four measures and by Goldfried and Goldfried (1977) on five. The fact that REL results are so negative compared to those found with SD and IMP strongly suggests that imagining threatening situations is an integral part of the last two therapies. The only contrary result is from Kondas (1967) on a single self-report test which found REL more effective than NT in independent samples of both college students and younger children.

Voluntary Heart Rate Control. Voluntary Heart Rate Control (VHC; Gatchel, 1974; Lang, 1974) is a biofeedback procedure in which the subject is taught to monitor and control his own cardiovascular functioning. Lights or tones are used to inform the subject of his own heart rate and its fluctuation, and the subject is instructed (in the one study reported here) without explanation to try to keep his heart rate slow. In the one available study Gatchel and Proctor (1976) found VHC superior to a validated AP on four of four measures, one or more from each measurement domain.

Misattribution Therapy. Derived from the work of Schachter and Singer (1962) on emotion, Misattribution Therapy (MAT) is based on the finding that experiencing an emotion requires both arousal and cognitive labelling of whatever specific feeling would be appropriate in a given circumstance. Thus if a subject can be led to believe that what he is feeling is not caused by the situation but by some other stimulus, i.e., a misattribution of cause, the result should be lessened anxiety. Regretably the authors of the one available study (Singerman, Borkovec & Bacon, 1976) report a failure of experimental manipulation and suggest that subjects with a long history of aversive arousal are unlikely to believe the experimental misattribution.

Comparative and Combinatorial Effects. The conclusions presented above deal soley with the ability of a therapeutic procedure to prove more effective than either NT or AP. However, many of those same studies tested one procedure against another, and/or tested separate procedures against combined procedures.

Results from studies comparing separate procedures are somewhat inconsistent, but nonsignificant results tend to come from studies that meet the initial criteria of this paper, while significant differences appear in studies that fail to meet one or more major standard. Nonsignificant differences are reported by Michenbaum et al. (1971; RET vs. SD), Weissberg and Lamb (1977; CSV vs. SD vs. speech preparation training), Calef and McLean (1970; FLO vs. SD), Kondas (1967; REL vs. SD), and Mylar and Clement (1972; IMP vs. SD).

Significant differences appear in the following studies. Marshall et al. (1977) found SD more effective than a skills training program on two self-report measures but not on a behavioral measure. Kirsch et al. (1975) showed FLO to be more effective than either IMP or SA on both self-report and behavioral measures. Karst and Trexler's (1970) results revealed FRT to be superior to RET on two of four self-report measures but not on either of two behavioral measures. The two significant differences appeared on potentially unreliable one-item scales. Trexler and Karst (1972) obtained significant results for RET over REL on two self-report measures and for REL over RET on one self-report measure. Three other measures (one physiological and two behavioral) were nonsignificant. Of the two measures that showed RET better than REL, one measure was a test designed explicitly to test the effects of RET. One strong study (Paul, 1966) found SD superior to IOT on one measure in each domain but not on a second physiological measure. Note that the Paul study is the only comparison between a learning theory and nonlearning theory based approaches to treatment. Among learning theory based approaches there is only scant evidence of differential effectiveness.

Results from studies which combine therapies and both therapy and more intensive speech training show promise for providing a treatment package that may supersede the effectiveness of SD, though that hypothesis itself has not been fully tested. Marshall et al. (1977) found a combination of rehearsal and SD more effective

than SD alone on a behavioral measure but not on two self-report measures. Unfortunately the results were based on a sample of too few subjects and the statistical analysis was inadequate. In a much stronger study, Sherman et al. (1974) found a combination of REL and speech rehearsal training more effective than NT or REL alone or rehearsal training alone on both behavioral and self-report measures. But a reverse effect of combining procedures has been shown by Michenbaum et al. (1971) who failed to find differences between RET and SD on any of six measures, but who found RET and SD superior to combined RET-SD on three of the six. RET-SD was more effective than a weak AP, also on three of six measures.

Delayed Posttest Results. A few studies have dealt with the question of whether short-term therapies like those reported above yield long-term results (Fremouw & Harmatz, 1975; Karst & Trexler, 1970; Michenbaum et al., 1971; Mylar & Clement, 1972; Paul, 1967, 1968; Trexler & Karst, 1972). Follow-up periods range in length from one month to two years. Since these results appear highly consistent, they will be covered summarily.

Results from follow-up studies are strongly encouraging. When self-report tests are repeated, results show that previous improvement was maintained or slightly increased, no matter what procedure was used. Improvement also generalizes to other areas with many subjects reporting a lessening of anxiety in a wide range of other situations. The finding that treatment for speech anxiety with SD can increase

grade-point averages (Paul, 1968) is worth pondering, especially when the averages of NT subjects dropped appreciably.

A common objection to behavior therapy procedures is that they treat the symptom rather than the cause of anxiety. The objection is based on the psychoanalytic approach to neurosis. According to that approach the subject has a reservoir of psychic energy, and speech anxiety is an instance of improper energy discharge. Were the subject functioning adequately, the energy would be discharged in other ways like sports, work, or lovemaking. To treat the symptom without getting at the root cause, for instance conflicting internal desires, will lead to symptom substitution: the subject may lose his speech anxiety only to become a compulsive gambler or a nail biter.

The psychoanalytic model stands in opposition to the learning theory model which would argue that anxiety is learned response which can therefore be unlearned. Results so far clearly support the learning model. Careful efforts to reveal even minimal instances of symptom substitution (Paul, 1967, 1968) have failed. Reports of relapse or worsening of symptoms in successfully treated subjects are rare with any procedure and nonexistent with SD.

Discussion

This concluding section will progress from design to measurement to statistics. The intent here is constructive. The following discussion is centered around the idea that substantially improved research in the treatment of speech anxiety need not require

greater outlays of time or money. The idealist might say, for example, that the number of subjects per cell should be increased. Indeed that would be desirable, but in an experiment comparing two treatments and an AP, an increase of one subject per cell might require a 10-20 hour increase in therapist time. The price for a small gain in reliability is very high.

Design

The matters of design to be discussed here are significant both heuristically and ethically. The topic of NT and AP controls will be covered first.

Future researchers can no longer justify the inclusion of NT controls in their design. Even if significant differences over NT are found, nothing important has been learned, for expectancy factors may well have produced the differences. In an otherwise well designed experiment, almost any procedure will yield significant gains over NT.

Ethical reasons for abandoning NT are even more compelling. There is a theoretical basis for supposing that being an NT subject would worsen speech anxiety by reinforcing the negative response. Investigators only report mean differences for NT, so one cannot tell how often such an effect might have occurred. The studies reported here (e.g., Michenbaum et al., 1971), however, often do note instances when NT subjects refused to give a posttest speech because they said it was too painful. Paul's

(1967) finding that NT subjects dropped almost one-half grade point during the following semester and stayed at that level for two years may suggest how great the damage might be. In many cases AP could also be dropped and replaced by a known successful treatment as a control. The highly efficient group SD could provide an excellent criterion against which to judge other controls. AP should be reserved for specific testing of hypotheses about a treatment differs from SD and not thrown in just to complicate the design.

Another important design possibility is abandoning the use of pretest and posttest speeches. Strong justification is found in work by Droppleman and McNair (1971) and Karst and Most (1973) on analogue public speaking situations. These studies show that the nature of stress in public speaking can be effected by having subjects imagine they are about to give speeches or by leading them to believe they are about to give speeches. Data so far appear comparable to actually giving a speech on both self-report and physiological measures. The obvious disadvantage is the inability to use behavioral measures. Nevertheless analogue research looks as though it could provide good pilot data in almost any project and possibly replace test speeches altogether in some instances.

Future researchers should also consider the general format of the study by Sherman et al. (1974), the only researchers to predict differential treatment effects across dependent measures. They hypothesized that rehearsal focused on delivery should be more effective on a behavioral measure than REL, but that REL should result in greater reduction than rehearsal on a self-report test.

Research of that kind seems most likely to yield information about the active components of therapeutic procedures and ultimately which procedure would work best for each subject.

The need for research in the latter area is demonstrated in a study by Stoudenmire (1972). While appropriate controls over confounding variables are evident in the majority of studies, one uncontrolled variable is the subjects' introversion-extraversion level. In a study unrelated to speech anxiety, Stoudenmire matched subjects for REL groups on both anxiety and introversion scores, and then analyzed data according to introversion level. REL worked with highly anxious introverts but not highly anxious extraverts. The results have considerable implications. While highly speech anxious extraverts may not be typical as research subjects, they probably are not so rare either, since the correlation between speech anxiety (on any measure) and extraversion is usually less than .30 with a coefficient of determination of less than .09. Speech anxious extraverts may comprise a substantial portion of the 10 per cent to 15 per cent of subjects who are not helped by SD.

Use and Choice of Dependent Measures

A problem which continues to appear in the research is use and choice of dependent measures. As is evident in Table 2, results across dependent measures are frequently inconsistent within studies, especially when investigators follow the desirable practice of

using measures from more than one measurement domain. While the correlation among measures across domains is usually rather low (and thus complete consistency of results unlikely in most studies), some of the inconsistency may be due to choice of dependent measure. This writer (Page, 1971, 1975) has earlier commented extensively on the problem so here a few criticisms will be briefly repeated and others added. For examples, the reader is referred to Table 2.

One obvious measurement problem is choice of self-report test. Several investigators have used the Personal Report of Confidence in speaking by Paul (1966) to measure response to pre- and posttest speeches. Since that instrument is clearly a trait measure of speech anxiety, such use is totally inappropriate. A state anxiety measure is called for. Equally inappropriate is the use of unreliable one-item scales like the Fear Survey Schedule II item (Geer, 1965). and ad hoc one-item scales. Reliable and well validated scales like Lamb's (1972), which are developed expressly for work with speech anxiety, are readily available and quick to administer.

While the choice of self-report instruments may be fairly simple, the choice of behavioral measures is more perplexing. Most often used is Paul's Timed Behavioral Checklist (Paul, 1966); a similar and purportedly superior instrument, Behavioral Assessment of Speech Anxiety (Mulac & Sherman, 1974) has recently been developed. The score on the Paul instrument is the sum of raters' observations that certain anxiety manifestations occurred in various segments of the speech, usually thirty seconds in length. Not surprisingly,

Mulac and Sherman use a similar procedure but also provide weighting coefficients for the behaviors; judges additionally provide estimates of symptom severity. The two measures have some common problems.

First, an examination of Paul's data reveals that many of the behaviors occur infrequently in pretest results for highly anxious subjects, indicating a lack of differentiating power. Further inspection shows that only about one third of the behaviors contributed most of the variance between pre- and posttest scores for successfully treated subjects. Second, it is not clear whose judgments of speech anxiety the instruments should assess. If the goal of treating speech anxiety is to produce individuals who function better in everyday life, then lay opinions would be a good source of what behaviors to include in a checklist. Each of the instruments discussed here is compiled from opinions of speech teachers whose opinions may not be representative of the general public. Despite all the work that has gone into them, it is not clear the instruments are superior to global judgments.

Two other behavioral measures used clearly lack validity. One is counting the number of "ah"s. In his original study Mahl (1956) clearly showed "ah"s are unrelated to anxiety level. Also invalid is timing silence. Use of pauses is frequently encouraged in public speaking classes, so increased silence may reflect a reduction of anxiety rather than an increase. At this point,

the best behavioral measures are probably global judgments and Mahl's (1956) "non-ah" ratio.

With regard to physiological assessment, researchers are probably doing as well as possible without purchasing far more expensive equipment. Most of the measures used have been shown to correlate with overall arousal, an important component of the anxiety response. The single exception is Skin Conductance which has been a subject of controversy for many years (Mathews, 1971).

Statistics

Commenting on statistical procedures may seem tenuous for the critic must speculate about what effects different tests might have had. Nevertheless some comments on statistics are in order here.

The well-known problem of univariate versus multivariate analysis is evident in speech anxiety research. Where investigators have correctly used multiple dependent measures, their statistical analyses seem to imply that the measures are orthogonal, i.e., uncorrelated. The usual practice has been to test for differences with multiple univariate F-ratios, usually 2 X 2 or 2 X 3 (pre-post X treatments) or 1 X 2 or 1 X 3 (change scores for conditions across treatments). The procedure is unsatisfactory. The use of multiple dependent measures increases the probability of Type I statistical error. The correct method of analysis would be a multivariate ANOVA, measures X pre-post X treatments. Where there is a large

number of dependent measures, it would be advisable to conduct multivariate tests on measures from the various measurement domains. Fremouw and Harmatz (1975) provide an excellent model of data analysis.

When change scores are used rather than entering pretest and posttest scores in separate cells, another problem arises. Change scores are quite unreliable, less reliable than either the pretest or posttest scores. Thus the probability of Type II error increases.

Problems of statistical error may be compounded further by the matching procedures used. Potential problems arise in two ways. First, the matching is often done with one-item unreliable scales like the scale from Geer's (1965) Fear Survey Schedule II. Since most subjects are drawn from the upper quartile where scores will tend to be less reliable on any measure, it is doubtful that the matching accomplishes its purposes.

The matching paradigm may also result in a more subtle difficulty. For matching to work advantageously as a control over differential pretest anxiety levels, there should be a substantial correlation between the dependent measure and the instrument on which subjects are assigned. When subjects are assigned on a trait anxiety test but a state anxiety test is the dependent measure, the condition is not met. Even when state and trait measures are developed together as with STAI (Spielberger, Gorsuch & Lushene, 1970), the correlation between the two will often result in a coefficient of determination around .25. Failure to use a measure for matching that correlates well with the dependent measures increases the probability of Type II error (Clarke, Coladarci & Caffery, 1965).

Probably the best matching procedure in a pretest-posttest experimental design with multiple dependent measures would be to match subjects on the basis of a composite score from those measures. A number of studies have matched subjects on the basis of pretest scores on the Timed Behavioral Checklist which decreases the probability of Type II error on that measure but increases it for others. Identifying those studies in Table II is quite easy, for they are the only studies that yield significant differences on the Timed Behavioral Checklist.

Conclusion

Interest in speech anxiety has increased dramatically in recent years, perhaps because of a recent awareness of the scope and severity of the problem. It is hoped that this report will provide useful direction for future work in the field.

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Table 1

Abbreviations for Dependent Measures

Physiological Measures

DS, Finger Sweat (Droppleman & McNair, 1971)

PU, Pulse Rate

SC, Skin Conductance (Myers, 1974)

Behavioral Measures

AH, Number of "ah"s in four-minute speech

BA, Behavioral Assessment of Speech Anxiety (Mulac & Sherman, 1974)

BC, Timed Behavioral Checklist (Paul, 1966)

GJ, Global judgment of anxiety level by observers

LS, Total length of speech when left to speaker discretion

NA, Non-"Ah" Speech Disruption Ratio (Mahl, 1956)

SI, Amount of silence per four minute speech

Self-Report Measures

AA, Affect Adjective Checklist (Zuckerman, 1960)

AD, Anxiety Differential (Husek & Alexander, 1963)

FS, One-item anxiety scale from Fear Survey Schedule II, (Geer, 1965)

FT, Fear Thermometer (Walk, 1956)

IB, Irrational Beliefs Test (Trexler & Karst, 1973)

OR, Overall Rating of Speech Anxiety from social fear scales in Fear Survey Schedule II (Geer, 1965)

PA, Personal Report of Communication Apprehension (McCroskey, 1970)

Table 1, p. 2

PR, Personal Report of Confidence in Speaking (Paul's 1966 version)

SF, Social Fear Scale (Karst & Trexler, 1970)

SR, S-R Speech (Endler, Hunt & Rosenstein, 1962)

ST, State-Trait Anxiety Inventory, State form (Spielberger, Gorsuch & Lushene, 1970)

SU, Subjective Units of Disruption (Wolpe, 1969)

Table 2

Results of Treatment Studies by Dependent Measure

Study	Results
Calef & McLean, 1970	PR → IMP > NT
	PR → SD > NT
	PR → SD = IMP
Fremouw & Harmatz, 1970	BC → Helper = Helpee > NT
	AD → Helper = Helpee > NT
	OR → Helper = Helpee > NT
Gatchel & Proctor, 1976	PU → VHC > AP
	PR → VHC > AP
	BC → VHC > AP
	SC → VHC > AP
Giffin & Bradley, 1969	PR → IOT = NT
Goldfried & Trier, 1974	BC → REL = Self-Control. REL = AP
	AD → REL = Self-Control REL = AP
	SI, ST → n. s. d.
Goldfried & Goldfried, 1977	BC → REL with speech hierarchy = REL with fear of flying hierarchy = AP
	PU, SI, ST → n. s. d.
Hemme & Boor, 1976	BC → High expectancy SD = SD
	PR, DS, LS n. s. d.

Table 2, p. 2

Study	Results
Johnson et al., 1971	PR→SD = Practice > NT
Karst & Trexler, 1970	PR→ FRT = RET > NT
	FS→ FRT = RET = NT
	FT→ FRT > RET > NT
	NA, SF, FS→ n. s. d.
Kirsch et al. 1975	BC→ FLO > SUA = IMP > AP
	PR→ FLO > SUA = IMP > AP
Kondos, 1967	Modified FS→ SD > NT Children
	Modified FS→ SD > NT College students
	Modified FS→ REL > NT Children
	Modified FS→ REL = NT College students
Lohr & McManus, 1975	PA→ Audiotaped SD = SD
Maleski, 1971	BC→ SD = SD plus awareness = SD plus suggestions
	AD, PR, SR n. s. d.
Marshall, et al. 1977	BC→ Skills training plus SD > SD
	SU→ Skills training < SD
	FT→ Skills training < SD
McCroskey, et al. 1970	PR→ Professional SD = Nonprofessional SD
	SR→ Professional SD = Nonprofessional SD

Table 2, p. 3

Study	Results
Michenbaum et al., 1971	BC → RET = SD > RET plus SD = AP = NT
	AH → RET = SD > RET plus SD = AP = NT
	WC → RET = SD = RET plus SD > AP = NT
	SI → RET = SD = RET plus SD > AP = NT
	AD → RET = SD = RET plus SD > AP = NT
	AA → RET = SD > RET plus SD = AP = NT
Myers, 1974	SC → SD > NT
Mylar & Clement, 1972	BC → SD = IMP > NT
	SU → SD = IMP > NT
	PR, SR → n. s. d.
Paul, 1966	BC → SD > IOT = AP
	AD → SD > IOT = AP
	DS → SD > IOT = AP
	PU →
Paul & Shannon, 1966	Composite of PR and SR → Group SD = SD > IOT = AP
Sherman et al., 1974	BA → REL plus rehearsal > REL = rehearsal = NT
	PR → REL plus rehearsal > REL = rehearsal = NT
Trexler & Karst, 1972	PR → RET > REL = NT
	FT → RET < REL = NT
	IB → RET > REL = NT
	BC, GJ, FS → n. s. d.

Table 2, p. 4

Study	Results
Weissberg & Lamb, 1977	AA → CM = Speech preparation > NT
	PR → CM = Speech preparation > NT
	BC n. s. d.
Woy & Efran, 1972	BC → High expectancy SD > SD = NT
	PU → High expectancy SD = SD = NT
	PR → High expectancy SD = SD > NT
	SR → High expectancy SD > SD = NT
	AD → High expectancy SD = SD > NT
Zemore, 1975	AA → SD for speech anxiety = SD for test anxiety = REL for speech anxiety = REL for test anxiety = NT
	BC → n. s. d.